The Epidemiological Features and Details of the Outbreak in Indian Cities of Novel Corona Virus Diseases 2019 (COVID-19) India, 2020

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Abstract:

Background: An outbreak of 2019 novel corona virus diseases (COVID-19) has spread rapidly through India. Here we share findings from a descriptive, exploratory review of all cases reported in India as of 25 April 2020.

Methods: All COVID-19 reported cases were collected from India's Infectious Disease Information System through April 25th, 2020.Analysis included: 1) description of patient characteristics; 2) analysis of age ranges and sex ratios; 3) measurement of case fatality and mortality rates; 4)Covid-19 laboratory in India; 5) development of an epidemiological curve;

Results: A total of 24532 reports of patients—18254 confirmed cases, 18254 active cases, 780 deaths, 5498 recovered; Most of the confirmed patients were aged from 30–79 years.1, 386 counties were affected in all 31 provinces. The onset of symptoms outbreak curve peaked around February, and then started to decline until April 25th.

Conclusions: The COVID-19 epidemic was spreading very fast. With many people coming back from a long holiday, India needs to brace for the possible rebound of the epidemic.

Introduction: A cluster of unexplained pneumonia cases in India created alarm among health officials in February. In February 2020, the fatal decease covid-19 spread in India. It was spread throughout several countries; the Govt issued a warning. It had been declared a pandemic by India and the WHO. The World Health Organization (WHO) has been notified there. Likely potential causes including influenza, avian influenza, adenovirus, severe corona virus acute respiratory syndrome (SARS-CoV), and corona virus respiratory syndrome (MERS-CoV) in the Middle East were excluded. The causative pathogen was identified as a novel corona virus, which culminated in the development of genomic characterization and the test process. Now named 2019-nCoV, the virus is separate, but closely related, from both SARS-CoV and MERS-CoV.Early cases revealed COVID-19 may be less serious than SARS and MERS. However, the onset of disease among fast-growing numbers of people and increasing evidence of human-to-human transmission suggests that 2019-nCoV is more contagious than both SARS-CoV and MERSCoV. Characterization of COVID-19's epidemiological features is essential to the creation and implementation of successful control strategies. The findings of a concise, exploratory review of all cases found through April 25, 2020 are published here.

Method
Study Design

This research was a descriptive, exploratory review of all COVID-19 cases reported in India nationwide as of the end of April 25th, 2020.As such, it uses a cross-sectional sample design in certain respects and thus, we used the Guidelines (www.covid19ind.org) to assist in our detailed reporting of this observational analysis.

Data Source

By categorizing COVID-19 as a Class B notifiable disease, Indian law demanded that all cases be reported to the Infectious Disease Information System of India immediately. Local epidemiologists and public health workers performed the entry of each case into the system, which investigated and collected information about possible exposures. By categorizing COVID-19 as a Class B notifiable disease, India's law required that all cases be reported to the Infectious Disease Information System of India immediately. Local epidemiologists and public health workers who investigated and gathered information about possible exposures performed entering each case into the system. All case records contain national identification numbers, and therefore, all cases have records in the system and no records are duplicated. All data contained in all COVID-19 case records in the Infectious Disease Information System through the end of April 25th, 2020 were extracted from the system as a single dataset and were then stripped of all personal identifying information.

Variables: At baseline, patient characteristics were collected, meaning the time of diagnosis, epidemiological investigation and entry into the information system for infectious diseases. Patients were categorized as occupation variable health workers if they had some form of active employment in a health facility. The variable co-morbid cities were determined by patient self-reported medical history, which was not independently checked using medical records for all cases, after epidemiological investigation. The severity of variable symptoms was categorized as mild, severe, or critical. Important cases included those displaying respiratory failure, septic shock and/or multiple dysfunction / failure of the organs. Date of onset for the construction of epidemiological curves was identified as the date on which patients themselves registered either fever or cough during epidemiological investigation. Cases have been graded as confirmed, suspected, clinically treated or asymptomatic. Confirmed cases on samples of throat swab were diagnosed based on positive results of the viral nucleic acid tests. Medical treatment of suspected cases was based on signs and exposures. Clinically diagnosed cases have been accused of having characteristics of lung imaging associated with corona virus pneumonia. Asymptomatic cases were diagnosed based on positive tests of the viral nucleic acid, but without any signs of COVID-19.For asymptomatic cases, the date of positive viral nucleic acid test result is used as start date.

Analysis

The demographic and clinical features were summarized using descriptive statistics for reported cases. They also determined age distribution graphs using patient age at baseline for reported cases diagnosed in India. The rate of case-fatality was determined as the total number of deaths divided by the total number of cases. The time observed was summarized using personal-days (PD), and the number of deaths was estimated as mortality. For geo-temporal study, the county-level location of each case at the time of diagnosis was used to create colour-coded maps of India in April 2020 to show the number of cases in each province. In both cases the epidemiological curve was constructed by plotting the number of cases and the self-reported symptom onset date. Date of onset of symptoms for confirmed, suspected, clinically diagnosed and asymptomatic cases was compiled over time to display total cases.
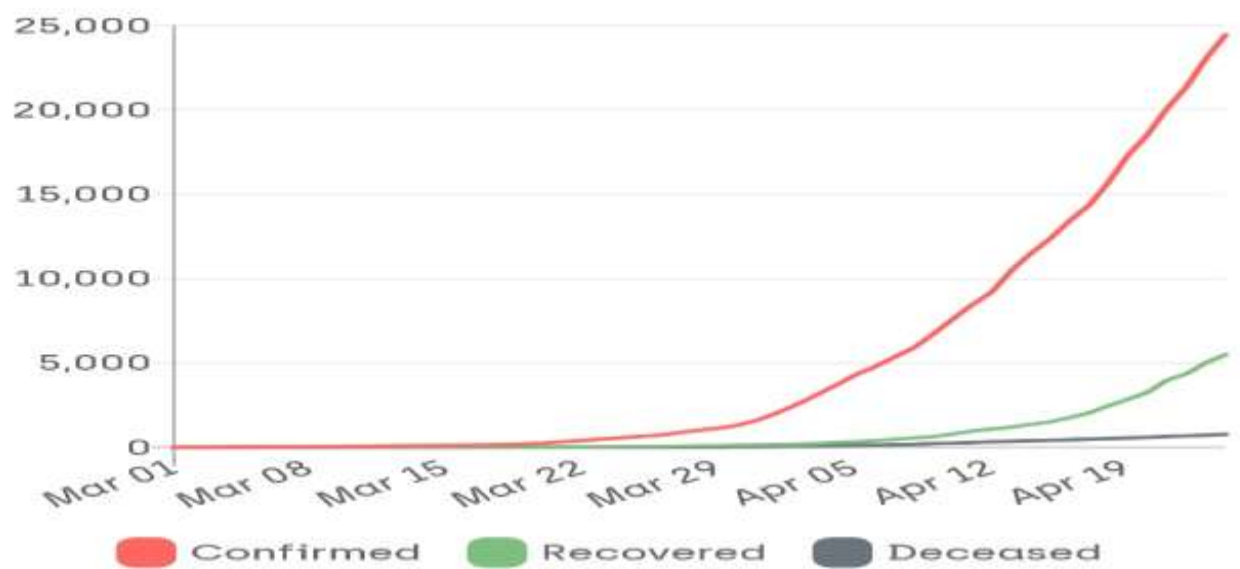
Results

Patients

A total of 24447 unique records were collected, and the study included data from all documents. And the study covered all 18171 individuals diagnosed with COVID-19 as of April 25th, 2020.5496 patients are treated again and 780 are deceased.
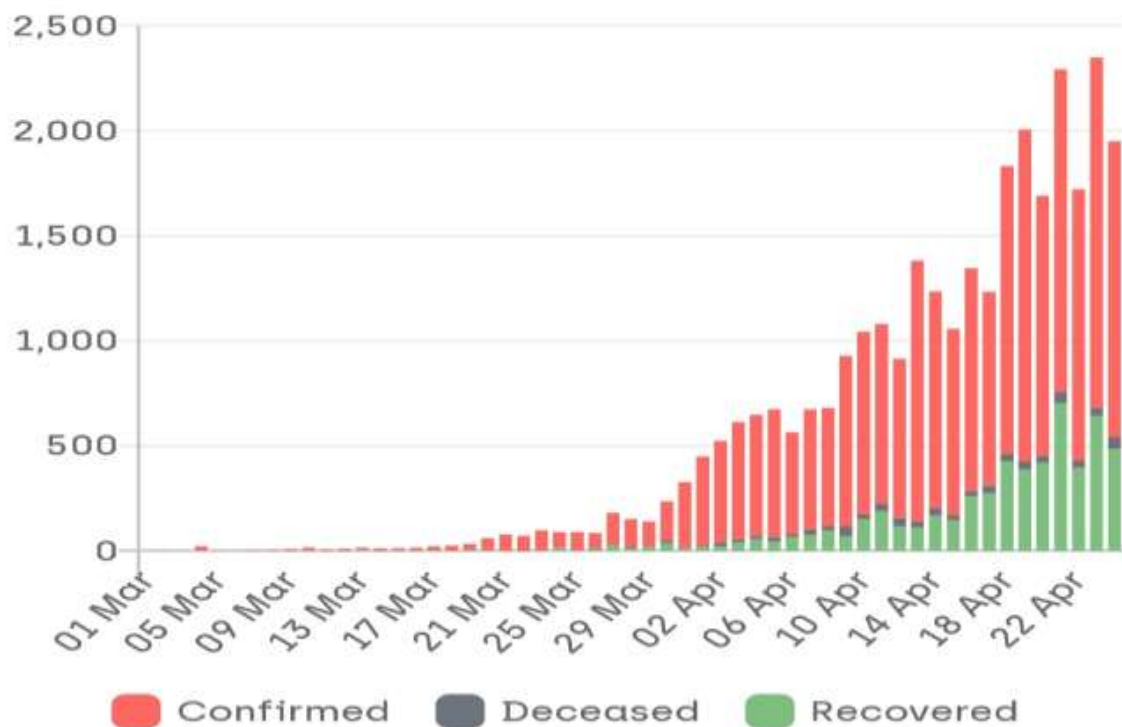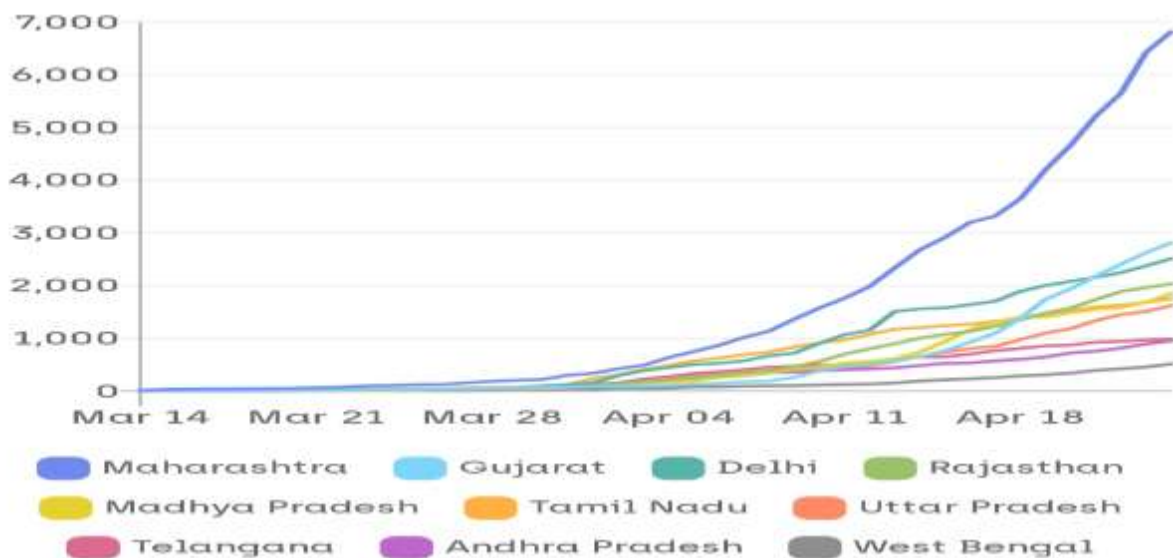
TOTAL CASES

This is a list of the total covid-19 cases in India from March through April. The graph shows that it was raising very much after 22nd march. But to confirm cases, the recovery treatment is not so good in due regard.
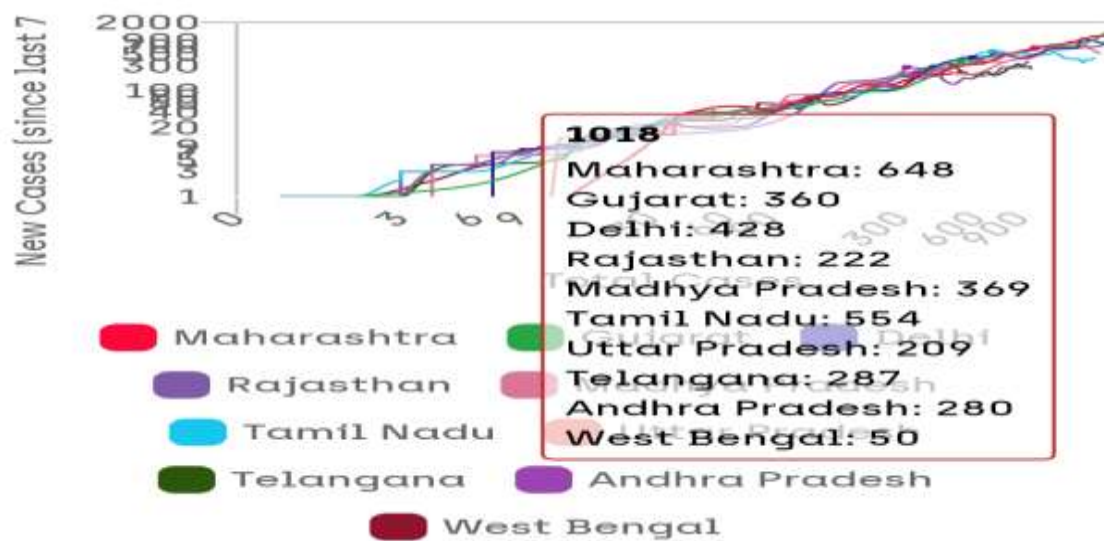
DAILY CASES

This graph shows us the rising everyday occurrences.

TOTAL CASES BY STATE

STATES - GROWTH TREND

1018
Maharashtra: 648
Gujarat: 360
Delhi: 428
Rajasthan: 222
Madhya Pradesh: 369
Tamil Nadu: 554
Uttar Pradesh: 209
Telangana: 287
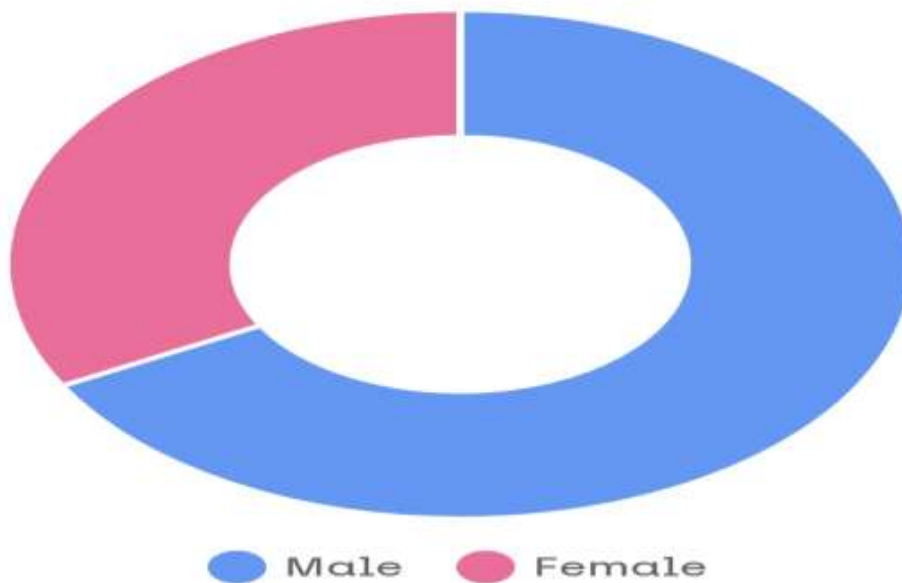Andhra Pradesh: 280
West Bengal: 50

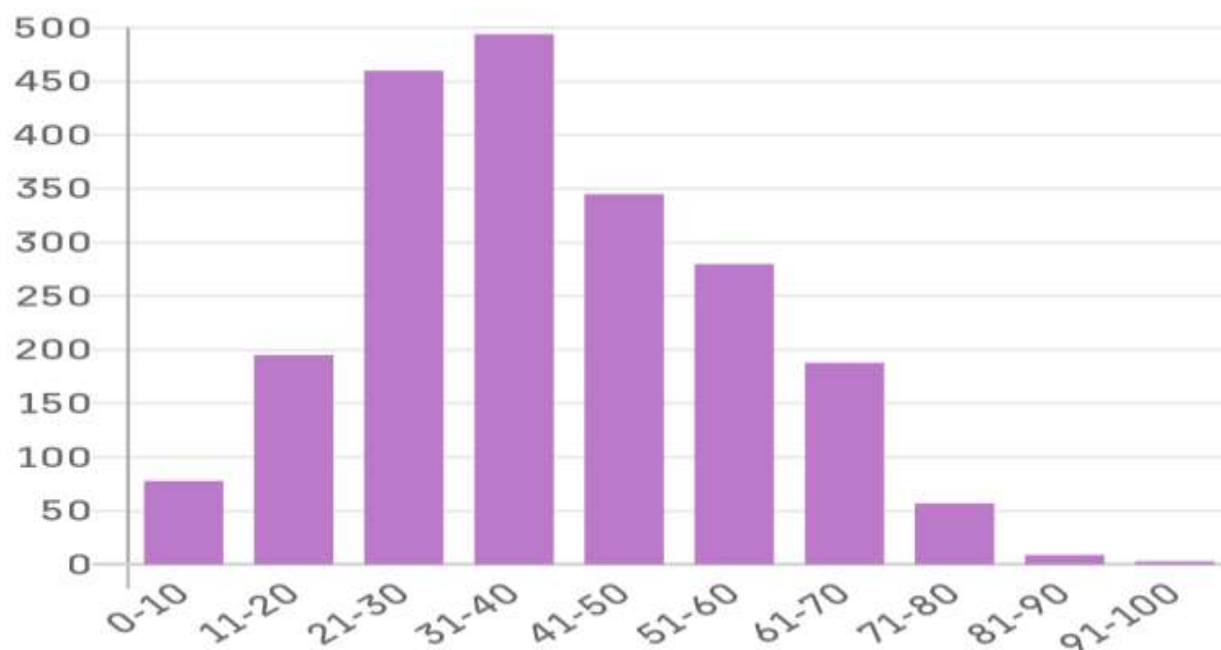This graph shows Indian cities' growth rate.

Deaths, Case Fatality Rates, and Mortality, Sex Ratio and Age Distribution

Of the 24447 confirmed cases, as seen in a total of 780 deaths. Only the age distribution of cases in India is reported in overall.

These two graphs display the wise distribution of this decease by gender and age.

Epidemiological Curve

The COVID-19 outbreak curve with number of cases plotted by symptom onset date of patient to April 25th, 2020.Confirmed, suspected, clinically diagnosed, and asymptomatic cases are clustered to indicate total daily cases by symptom start date. The inset indicates cases / day started to develop symptoms in February 2020.The same COVID-19 outbreak curve for reported cases with only the number of cases plotted by date of onset of symptoms in patients from February 2020.Such data are overlaid with confirmed cases plotted by diagnosis date to display the difference between the time patients become ill and the time they are eventually identified and being reported to the Infectious Disease Information System. While the onset of disease peaked around February for reported cases, diagnosis of infection with nucleic acid testing of throat swabs did not peak until this time.

Subgroup Findings

The COVID-19 outbreak curve with the number of cases plotted for two subgroups by the onset date of symptoms from February 2020-confirmed cases and all cases among health workers nationwide. After February, peak timing of onset of symptoms between cases outside India Province occurred on. Many of these cases reported having recently lived in or visited China, or having been positively in close contact with an infected person. The peak timing of onset of symptoms among cases of health care workers occurred in April. Reported reports, case frequency, and case fatality rates are identified among health workers in different areas of India and varying time periods.

The affected cities of Covid-19in India

COVIT-2019 UPDATE TILL 24th April ,2020				
Baseline	**Confirmed Cases**	**Active**	**Deaths**	**Recovered**
Overall	24532	18254	780	5498
Maharastra	6817	5559	301	957
Gujrat	2815	2423	127	265
Delhi	2514	1604	53	857

Rajasthan	2059	1534	32	493
Madhya Pradesh	1846	1544	92	210
Tamil nadu	1755	867	22	866
Uttar pradesh	1621	1370	25	226
Telangana	983	667	25	291
Andhra pradesh	955	781	29	145
West bengal	571	450	18	103
Karnataka	474	304	18	152
Jammu ana kashmir	454	340	5	109
Kerala	450	116	3	331
Pumjab	298	211	17	70
Haryana	275	86	3	186
Bihar	225	179	2	44
Odisha	94	60	1	33
Jharkhand	59	48	3	8
Uttarakhand	48	23	0	25
Himachal pradesh	40	20	2	18
Chattisgrah	37	5	0	32
Assam	36	16	1	19
Andaman and Nicobar Island	29	18	0	11
Chandigrah	27	12	0	15
Ladakh	18	2	0	16
Meghalaya	12	11	1	0
Goa	7	3	0	7
Pondicherry	7	0	0	4
Tripura	2	0	0	2
Manipur	2	0	0	2
Arunachal Pradesh	1	0	0	1
Mizoram	1	1	0	0

This table shows that the fatal decease affected various cities in India. Here are the full details of the various cities of India's conforming, involved, recovered, and death events. It indicates that Maharashtra is India's biggest affected city. Mizoram is India's worst-hit city.

Covid-19 testing lab in India

Sl no	Covid-19 testing lab in India
1	Regional medical research centre
2	Rangaraya medical college
3	Sidhartha medical college
4	Gouhati medical college
5	Jorhat medical college
6	Silchar medical college

7	Tezpur medical college and hospital
8	Darbhanga medical college
9	Indira gandhi institute of medical sciences
10	Rajendra memorial research institute of medical sciences
11	Post graduate institute of medical education
12	Govt. medical college
13	AIIMS
14	Late baliram kashyap M govt. medical college

This table shows India's Covid-19 research lab that is located in several towns.

Conclusion: Corona virus has been declared a pandemic by the WHO. This cracks the world over. Affect many countries and so the death rate is rising day by day from all over the world. So it also has a bad impact in India. But if everyone is alert about the situation then all the Indians will resolve it.

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